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methane." Melvin Guy Mellon, "Further study of a lead standard cell."

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PRINCETON: Arthur Ferguson Benton, "Gas flow meters and the end correction in the determination of gas viscosity by the capillary tube method." Homer Hiram Lowry, "Studies in the absorption by charcoal." Merwyn Clarence Teague, "Efficiency, testing and improvement of gas warfare box respirators."

VIRGINIA: Judson Hall Robertson, "Hydrolysis and heat of formation of urea sulphate, and the relation of these factors to the decomposition of urea into ammonia and carbon dioxide in aqueous solutions."

WISCONSIN: George J. Ritter, "Catalytic hydrogenation of cotton seed oil." Van Lorens Johnson, "Contribution to the study of the catalytic decomposition of hydrogen peroxide." Barnett Sure, Title of thesis not given. Wallace Headen Strowd, "Studies in the nitrogen metabolism of the soy bean." Daniel Christopher Leander Sherk, "Thymol and carvacrol problems in connection with the Monardas." George Robert Shaw, "Chemistry of platinum at high temperatures and pressures." Clifford Shattuck Leonard, Title of thesis not given. Clinton B. Clevenger, I. "The accurate determination of the hydrogen-ion concentration of plant juices by means of the hydrogen electrode. II. Factors affecting the acidity of hydrogen-ion concentration of plant juices."

YALE: Charles Barkebus, "Some constituents of *Viburnum Prunifolium* or Black Haw." Stuart Robert Brinkley, "Equilibrium in the system ammonia-ammonium nitrate-ammonium thiocyanate." Florian Anton Cajori, "Nutritive properties of nuts." John Joseph Donleavy, "Alkylation of aromatic amines by interaction with aliphatic alcohols." Jacob Benjamin Fishman, "New derivatives of benzylalcohol possessing possible therapeutic interests." Martha Richardson Jones, "Studies on carbohydrate metabolism in rabbits." Frederick William Lane, "Study of certain alkyl derivatives of resorcinol and their value as antiseptics." Walter Gerald Karr, "Studies on nutrition." Icie Gertrude Macy, "Comparative studies on the physiological value and toxicity of cotton seed and some of its products." Lyman Edwards Porter, "Analytical chemistry of gallium." George Walter Pucher, "Development of the intermediate stages of a new method of

synthesizing histamine." Arthur Henry Smith, "Effect of solutions of certain salts and colloids on the permeability of the capillary walls."

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(To be concluded)

THE LOW TEMPERATURE LABORATORY OF THE BUREAU OF MINES

ON June 17, 1920, Professor J. C. McLennan, of the University of Toronto, gave a lecture before the Chemical Society in London, on "Helium, Its Production and Uses." This lecture has been printed in the July, 1920, number of the *Journal of the Chemical Society*. At the close of his lecture Professor McLennan gave special emphasis to the great need of a properly equipped cryogenic laboratory somewhere within the British empire. To quote his own words:

The list of problems rendered capable of attack by the use of liquid helium might be easily extended, but those cited already will serve to show that the field is large and that it is well worth while for us to make a special effort to secure adequate financial support for the equipment and maintenance of a cryogenic laboratory within the Empire. It is probably beyond the ordinary resources of any university to equip and maintain such a laboratory, but the project is one which merits national and probably imperial support. It should appeal to private beneficence as well for it is a project deserving strong and sympathetic help.

It may be of interest to American scientists to know that the need of such a laboratory in this country was recognized by the Bureau of Mines more than a year ago. The immediate need was for the obtaining of certain scientific data which is necessary for the improvement and development of the commercial work in connection with the government helium plants, but there is a large field outside of this immediate need which can be covered by such a laboratory.

Through the interest and broadmindedness of Commander A. K. Atkins, of the Navy, and Colonel C. DeF. Chandler and Lieutenant R.

S. Olmsted, of the Army Air Service, necessary funds for the purchase of equipment and the maintenance of this laboratory were furnished to the Bureau of Mines late last spring. This equipment is now being received and installed by the Bureau of Mines in the New Department of the Interior Building at Washington. The equipment consists of two four-stage Norwalk compressors with a capacity of 75 cu. ft. of free air per minute each. These will be used for making liquid air and for other purposes in connection with the experimental work. There will also be one vertical submarine type Norwalk compressor with a capacity of 12 cu. ft. of free air per minute to be used in connection with a liquid hydrogen cycle, and a similar compressor with a capacity of 8 cu. ft. of free air per minute for use in connection with a liquid helium cycle. These compressors will all be driven by variable speed motors, and be equipped with unloading valves so that the capacities can be varied within wide limits. In addition, there will be an adequate equipment of gas holders, a machine shop, and a chemical and physical laboratory. The force will consist of four technical men and two mechanics, and the whole laboratory will be under the direction of the writer. It is hoped that the equipment will be completely installed by January 1.

Whereas the main object of the laboratory will be to assist in every possible way the whole helium project, both on the production and refining ends, there is a strong desire that this laboratory shall be of material use to science in general, and that it may be possible later on to make arrangements for its facilities to be used in special cases by men outside the government service who are specially equipped for such work.

R. B. MOORE

SCIENTIFIC EVENTS PHOSPHATE IN MOROCCO

IN times of peace this country, according to the Geological Survey, has in a single year sent abroad, mostly to Europe, 1,250,000 long tons or more of high-grade phosphate rock, or more than 40 per cent. of its total annual output. The exports decreased during the war

until, in 1918, they amounted to only 143,000 tons, or 6 per cent. of the domestic output. They increased to 379,000 tons in 1919, but these reports of newly discovered large deposits in Morocco, which, like those in Algeria and Tunis, are near to the large fertilizer market in southern Europe, may mean that the American exporter of phosphate rock will have formidable competition in that region.

As superphosphate fertilizer is manufactured chiefly from phosphate rock, France, by her control of the deposits in Algeria, Tunis and Morocco, has a practical monopoly of the North African sources of a commodity that is essential to the restoration of European agriculture. When these deposits have been further developed and adequate transportation facilities have been provided the market for phosphate rock in southern Europe will probably be supplied from northern Africa, so that the American exports to Europe will be confined to the northern countries.

The principal deposits in Morocco are about 80 miles southeast of Casablanca and consist of three beds or series of beds of phosphatic sand in a formation that is 50 to 200 feet thick. The uppermost phosphatic bed contains 67 per cent. of tricalcium phosphate, the middle bed 30 per cent. and the lower beds 53 per cent., and the commercial average for the group is about 59 per cent. Water and hydroelectric power for the exploiting of the deposits can be obtained from a river near by. In order to market the rock, however, a railroad would have to be built from the deposits to Casablanca, the nearest port.

Another deposit, which consists of soft phosphatic material carrying 72 to 75 per cent. of tricalcium phosphate, lies 40 miles northeast of the principal one. Still another deposit lies a short distance southeast of Rabat, a coast town. This deposit consists of sandy clay 16 feet thick containing nearly 47 per cent. of tricalcium phosphate.

THE PASTEUR INSTITUTE OF PARIS

THE Paris correspondent of the *Journal of the American Medical Association* writes: